

Message

From: Nedland, Thomas S - DNR [Thomas.Nedland@wisconsin.gov]
Sent: 2/1/2021 2:42:26 PM
To: 'eric.m.norton@usace.army.mil' [eric.m.norton@usace.army.mil]; Weaver, Kerryann [weaver.kerryann@epa.gov]
CC: 'Eggers, Steve D MVP' [steve.d.eggers@usace.army.mil]
Subject: Big Hollow Review - DNR Hydro Geologist Review and Opinion

Flag: Follow up

Hi all – please see the below excerpt of a review completed by one of DNR’s Hydrogeologists.

Please let me know if you have any questions about the review. – tom

Ps. I am still struggling with whether this is an issue...Remember the intent is that these will be “drier end” wetlands, so the goal is to only have hydrology persist until mid to late May. Pumping for agricultural purposes doesn’t usually start until June. However, I understand that we do need to consider a worst-case scenario, which complicates this. What if we developed some type of “pumping agreement” that limited when they could pump? I don’t even know if this is legal, but just thought I would throw it out for consideration and discussion. Please let me know if you want me to pursue the “pumping agreement” idea with our legal program.

Tom,

Now that I know which well it is I looked at the 2010-2018 pumping and think a 90-day period of pumping makes more sense because there are generally only 3 months per year with significant pumpage. Decreasing the pumping duration to 90 days increases the pumping rate to 240 gpm. To get the anticipated pumping rate I looked at current vs. proposed acreage. From the aerial photo it appears that there is about 220 acres under irrigation from this well currently. From the response letter it looks like the portion of the parcel to be irrigated after the project is about 50-60 acres so my estimate for the fraction of pumping that would be retained is $240\text{gpm} \times (55/220) = 60\text{ gpm}$ for 90 days.

The well is located approximately where I thought it might be so the aquifer parameters that I used for the last analysis are suitable for this site.

The drawdown estimates that you asked for are below. Keep in mind that Theis’ method does not include any recharge during the pumping period and that we are assuming that there is no return flow i.e. all water pumped is lost to the system through ET. So the drawdown estimates are likely higher than actual.

distance (ft) from pumping well	drawdown (ft) with pumping at 60 gpm for 90 days	drawdown (ft) with pumping at 240 gpm for 90 days
100	1.5	6.0
500	0.78	3.1
1000	0.49	2.0
1500	0.32	1.3
2000	0.22	0.88

No doubt you’re aware that there are other high-capacity wells in the area. The cumulative impact of the other wells will add to the total drawdown at the site. Several of these wells are on the same property. A few others may be close enough to significantly impact the site too.

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Tom Nedland, PWS

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